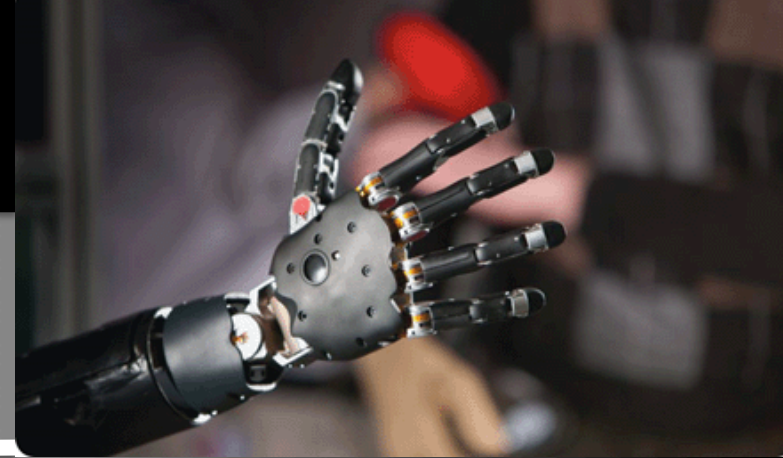


# Controlling Bionics

by Miranda Mott



## Fast Facts About the Discovery:

- *Who?* Andrew Schwartz, Ph.D., University of Pittsburgh and team
- *When?* 2008 (successful with two monkeys)
- *What?* A mentally-controlled robotic arm

(source: <http://thevarsity.ca/2013/03/25/mechanical-mind-meld/>)

## The Big Question: *How???*

Signals from the area of the brain involved in planning hand motions are captured in a grid that is surgically implanted in the brain, a process known as Electrocorticography, or ECoG. A computer algorithm then interprets these signals and translates them into commands to move the robotic arm.

This breakthrough stems from more than a decade of research with monkeys and other animals. Ultimately, scientists were able to teach a monkey to use a robotic arm mentally to feed itself marshmallows.

<http://www.sciencemag.org/content/338/6114/1525.full#named-content-7>

## Some Success Stories

- A 53-year-old woman who was paralyzed from the neck down by a genetic neurodegenerative condition
- A 30-year-old man paralyzed in a motorcycle accident
- A 66-year-old tetraplegic man

## Goals and Setbacks

Ideally, mind-controlled robotic technology, like this arm, will be used in the future to aid people with paralysis or loss of limbs. Research also hints at the possibility of one day successfully reanimating paralyzed limbs in people.

But several complications have arisen alongside these hopeful developments. The robotic arms are expensive, and their movements are not as swift or as smooth as movements made by uninjured people. They are also experimental and have only been used in the lab, aided by technicians.



<http://www.post-gazette.com/stories/local/neighborhoods-city/brain-linked-to-robotic-hand-success-hailed-318436/>